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(54) 【発明の名称】 座標入力装置を有するパーソナルコンピュータ

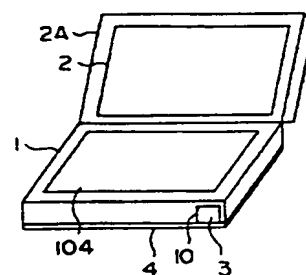
(57) 【要約】

Abstract

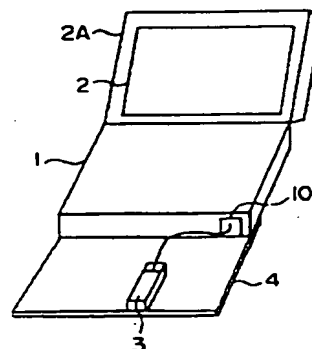
【課題】 いわゆるマウスと同等の操作性を有し、かつノート型やパームトップ型等の携帯型コンピュータに実装可能な座標入力装置を有するパーソナルコンピュータを提供することにある。

【解決手段】 特に携帯型のパーソナルコンピュータにおいて、コンピュータ本体1の一部に、マウスに相当する座標入力装置3を着脱自在に内蔵する収納部10が設けられた構成である。さらに、コンピュータ本体1には底面部に座標入力装置3の操作エリアを構成する操作パッド4が設けられている。操作パッド4は、未使用時にはコンピュータ本体1の底面部の範囲内に配置されており、使用時には座標入力装置3の操作エリアとして使用可能な位置に取出されるように構成されている。

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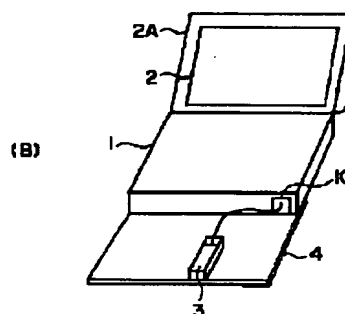
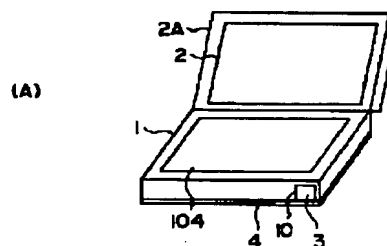
(54) **PERSONAL COMPUTER HAVING COORDINATE  
INPUT DEVICE**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To provide a personal computer having coordinate input device which has operability equal with a so-called mouse and can be mounted on a portable computer such as notebook type or palm top type computer.

**SOLUTION:** Especially concerning the portable personal computer, a housing part 10 for freely attachably and detachably incorporating a coordinate input device 3 corresponding to the mouse is provided at one part of main body 1 of the computer. Further, a pad 4 for operating consisting of the operating area of the coordinate input device 3 is provided on the bottom face part of main body 1 of the computer. The pad 4 for operating is constituted so as to be arranged within the range of bottom face part of main body 1 of the computer at the time of non-use and to be taken out at a position for using as the operating area of the coordinate input device 3 at the time of use.

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Personal Computer Having Coordinates Input Device  
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[TITLE OF THE INVENTION]

Personal Computer Having Coordinates Input Device

[ABSTRACT]

[PROBLEM TO BE SOLVED]

To provide a personal computer comprising a coordinates input device which can be manipulated like a mouse and can also be mounted to a notebook type or palm-top type portable type computer.

[SOLUTION]

In a portable type personal computer, an accommodating section 10 removably comprising a coordinates input device 3 corresponding to a mouse is provided at a part of the computer body 1. Moreover, the computer body 1 is provided with a manipulation pad 4 forming the manipulation area of the coordinates input device 3 at the bottom surface. The manipulation pad 4 is arranged, when the coordinates input device 3 is not used, within the range of the bottom surface of the computer body 1 and it is take out to the applicable area as the manipulation area of the coordinates input device 3 when it is used.

[0008]

[Preferred Embodiments of the Invention]

The preferred embodiments of the present invention will be explained with reference to the accompanying drawings.

Fig. 1 shows the appearance of a personal computer in relation to a preferred embodiment of the present invention. Fig. 2 shows a part of a personal computer in relation to a preferred embodiment and Fig. 3 shows the appearance of a coordinates input device in relation to a preferred embodiment.

(Structure of the Embodiment)

A personal computer of the preferred embodiment is a notebook type or palm-top type portable personal computer, integrally comprising a computer body 1, a display unit 2A having the liquid crystal display screen 2 and a keyboard 104. The computer body 1 comprises CPU (central processing unit) which is the main structural element and various memories. The display unit 2A is provided to be freely opened or closed for the computer body 1 and also functions as a covering member to cover the upper surface of the keyboard 104 when it is closed.

[0009]

Moreover, the personal computer of this embodiment mounts a coordinates input

device 3 to the accommodating section 10 of the computer body 1 to manipulate a cursor to be displayed on the display screen 2 and issue an instruction by icons. The coordinates input device 3 is formed, as shown in Fig. 3, like an angular pole, corresponding to a mouse having click buttons (selection and canceling) 3A, 3B. Hereinafter, the coordinates input device 3 is called a mouse.

[0010]

An accommodating section 10 provided at the computer body 1 is, as shown in Fig. 2, a kind of groove formed, for example, near the angled portion of the side surface, by partially removing a part of the bottom surface 1A of the computer body 1. At the inside of the accommodating section 10, a pair of grooves 10A, 10B are formed to hold the mouse 3 as will be explained later.

[0011]

As shown in Fig. 3, the mouse 3 is provided, at each side surface, with the projected portions 3C, 3D to be engaged with the grooves 10A, 10B. The mouse 3 can be accommodated in the accommodating section 10 using the grooves 10A, 10B as the guides by engaging the projected portions 3C, 3D with the grooves 10A, 10B. On the contrary, with the guides 10A, 10B used as the guides, the mouse 3 can be taken out to the outside from the accommodating section 10. With the grooves 10A, 10B, the mouse 3 is prevented to be dropped to the lower side (in the direction of the bottom part 1A) of the computer body 1 from the accommodating section 10.

[0012]

On the other hand, in this embodiment, as shown in Figs. 1(A) and 1(B), a manipulation pad (mouse pad) 4 to form the manipulation area of the mouse 3 is provided in the bottom part 1A side of the computer body 1. The manipulation pad 4 is formed of a thin plate hard plastic material in almost the same area as the bottom part 1A of the computer body 1. At the front surface, cloth is provided to assure smooth manipulation of the mouse 3.

[0013]

The manipulation pad 4 is mounted to be rotatable to the bottom surface 1a of the computer body 1 as a screw 5 and a washer 6 as shown in Fig. 6. The rotating axis by this screw 5 is located, as shown in Fig. 7, to any one of the front side 4A, right side 4B and left side 4C of the computer body 1. Namely, Fig. 7 is a plan view of the computer body 1 when it is placed upside down. As shown in Fig. 1(B), when the manipulation pad 4 is used by taking out to the front side of the computer body 1, the rotating axis is set at the front side 4A. In the same manner, when the manipulation pad 4 is used by taking out to the right side (when the condition of Fig. 1(B) is designated as the front side) of the computer body 1, the rotating axis is positioned at the right side 4B (at the left side in Fig. 7) and when it is used by taking out to the left side of the computer body 1, the rotating axis is positioned at the left side 4C. (Holding structure of mouse 3)

As explained above, in this embodiment, when the mouse 3 is not used, it is

accommodated in the accommodating section 10 provided to the computer body 1 as shown in Fig. 2. In this case, since the grooves 10A, 10B are provided in the accommodating section 10, the mouse 3 is never dropped to the lower side of the computer body 1. However, when the computer body 1 is inclined placing the accommodating aperture of the accommodating section 10 to the lower side, it is probable that the mouse 3 is dropped from the accommodating section 10. Particularly, in this embodiment, since a portable computer is assumed, the computer body 1 is sometimes inclined.

[0014]

Therefore, in this embodiment, as shown in Fig. 4 and Fig. 5, a projected member 7 is provided at the computer body 1 side to prevent the mouse 3 to be dropped from the accommodating aperture of the accommodating section 10. Here, Fig. 4(A) is a plan view of the computer body 1 observed from the bottom surface 1A side, while Fig. 4(B) is a plan view of the computer body 1 observed from the side surface where the accommodating aperture of the accommodating section 10 is provided by placing the bottom surface 1A to the upper side. Moreover, Fig. 5 is an enlarged cross-sectional view of the part 40 corresponding to the projected member 7.

[0015]

The projected member 7 is held, as shown in Fig. 5, by a spring 8 to the position corresponding to the inside of the accommodating section 10 at the bottom surface 4A of the computer body 1. The projected member 7 is urged at the inside of the accommodating section 10 with the spring 8 and is regulated to the predetermined position with a pawl 9 provided to the computer body 1. That is, as shown in Fig. 4(B), when the mouse 3 is not accommodated, the projected member 7 is urged by the spring 8 and is projected to the inside of the accommodating section 10.

[0016]

When the projected member 7 is placed in contact with the flat surface area of the mouse 3 to apply a force exceeding the urging force of the spring 8, it is pressed to the computer body 1 side as shown in Fig. 5. On the other hand, the mouse 3 is provided with a recess 3E which is engaged with the shape of the end portion of the projected member 7 as shown in Fig. 3.

[0017]

When the mouse 3 is accommodated in the accommodating section 10 of the computer body 1 in the structure explained above, the flat area (relatively projected area) other than the recess 3E depresses the projected portion 7 projected up to the inside of the accommodating section 10. When the mouse 3 is perfectly accommodated into the inside of the accommodating section 10, the projected member 7 is urged to be projected by the spring 8 at the position of the recess 3E of the mouse 3 and is then engaged with the recess 3E of the mouse 3. Thereby, the mouse 3 is held by the projected member 7, and even when the computer body 1 is inclined with the accommodating aperture of the accommodating section

10 placed to the lower side, the mouse 3 is never dropped from the accommodating section 10 and can be maintained to be accommodated stably within the inside of the accommodating section 10.

[0018]

On the other hand, when the mouse 3 is taken out from the accommodating section 10, the mouse 3 is moved toward the accommodating aperture from the bottom surface 1A of the computer body 1. In this case, the projected member 7 is disengaged from the recess 3E of the mouse 3 and is pushed to the computer body 1 side by the flat surface other than the recess 3E. Therefore, the mouse 3 can easily be taken out from the computer body 1.

[0019]

According to the present invention as explained above, when the mouse 3 is not used, the mouse 3 can be accommodated to the inside of the computer body 1 as shown in Fig. 1(A). That is, the mouse 3 can be mounted at the inside of the computer body 1 like the other comprised parts. Meanwhile, on the occasion of manipulating the cursor on the display screen 2 using the mouse 3, the mouse 3 is taken out from the accommodating section 10 of computer body 1. In this case, as shown in Fig. 1(B), the manipulation pad 4 arranged at the bottom surface 1A of the computer body 1 is rotated and is taken out to the forward. The cursor on the display screen 2 can be manipulated by manipulating the manipulation pad 4 on the flat surface.

[0020]

Therefore, the mouse 3 which can generally be applied to a desk-top type computer can be mounted in standard as the coordinates input device to the portable type computer of which installation space is limited. In other words, there is provided a personal computer which is provided with the coordinates input device which simultaneously realizes manipulation property of the mouse 3 and also assures reduction in size for mounting to the computer body 1.

(Modification example 1 of the embodiment)

Fig. 8 to Fig. 11 show a modification example of the mounting structure of manipulation pad 4 in this embodiment. In this modification example, the manipulation pad 4 is placed at the upper side of the keyboard 104 in place of at the bottom surface 1 of the computer body 1. Namely, as shown in Fig. 8, when the mouse 3 is not used, the manipulation pad 4 is arranged as a cover of the keyboard 104. Meanwhile, as shown in Fig. 9, when the mouse 3 is to be used, the manipulation pad 4 is set to the opening condition to take it out to the forward area of the computer body 1. Namely, in this modification example, the manipulation pad 4 is mounted to be freely opened or closed by a rotating mechanism 20 at the opposed position of the display unit 2A of the computer body 1.

[0021]

The rotating mechanism 20 is composed, as shown in Fig. 10, of a metal rod 21 forming the rotating shaft, bearings 22A, 22B for holding the metal rod 21 and a bearing 14A

provided at a side of the manipulation pad 4. The bearings 22A, 22B in the side of computer body 1 are arranged at the angular portion of the upper surface (flat surface comprising the keyboard 104) of the front surface side where the accommodating section 10 of mouse 3 is provided. The bearings 22A, 22B are provided with a through hole 23 to allow insertion of the metal rod 21. On the other hand, the bearing 14A of the manipulation pad 4 is also provided with a through hole 14B for insertion of the metal rod 21. Fig. 11 is a side elevation of the computer body 1 of Fig. 10 observed from the side surface.

[0022]

The rotating mechanism 20 is structured through combination of such elements. Namely, a bearing portion 14A of the manipulation pad 4 is set so that the center of the through holes 14B, 23 is matched with the interval between the bearing portions 22A, 22B in the side of computer body 1. The manipulation pad 4 is kept in the structure to be freely opened and closed using the metal rod 21 as the rotating shaft.

[0023]

When the manipulation pad 4 of such structure is used, the manipulation pad 4 can immediately be opened after the display unit 2A is set to the opening condition while a computer is used as shown in Fig. 9. Therefore, a user can manipulate the keyboard 104 and also can manipulate the mouse 3 after taking it out from the computer body 1.

(Modification example 2 of the embodiment)

Fig. 12 to Fig. 15 show a second modification example of the mounting structure of the manipulation pad 4. This embodiment has a structure, as shown in Fig. 12, where the manipulation pad 4 is provided at the bottom surface 1 of the computer body 1 like the embodiment but it employs a slide type structure in place of the rotating type. Here, the manipulation pad 4 is slid in the right direction for the computer body 1.

[0024]

The sliding mechanism which slides such manipulation pad 4 also includes a pawl section 11 provided at the bottom part of the computer body 1 as shown in Fig. 13 (side elevation of Fig. 12). Being supported by this pawl section 11, the manipulation pad 4 is slid to the external side from the bottom surface of the computer body 1.

[0025]

Moreover, as shown in Fig. 12, the lower side of the side surface of the computer body 1 is provided with a slit type window 12. The manipulation pad 4 is fixed with a screw 13 through this window 12. Here, the side surface of the manipulation pad 4 is provided with the screw holes 24A, 24B, 24C at three positions, for example, in the sliding direction. The manipulation pad 4 is fixed through engagement of screw holes 24A, 24B, 24C with the screw 13.

[0026]

Namely, as shown in Fig. 14, the manipulation pad 4 arranged at the bottom surface

of the computer body 1 is slid in the right direction and the manipulating surface of the mouse 3 is taken out to the outside from the computer body 1. Here, since the left end side of the manipulation pad 4 can be fixed to the bottom surface of the computer body 1 by tightening the screw 13 to the screw hole 24A, for example, in the left side of the manipulation pad 4 through the window 12. Moreover, under the unused condition, the manipulation pad 4 can be fixed to the bottom surface of the computer body 1 by arranging the manipulation pad 4 to the bottom surface of the computer body 1 and then tightening the screw 13 to the center screw hole 24B. In addition, for example, when the manipulation pad 4 arranged at the bottom surface of the computer body 1 is slid in the left direction, the right end side of the manipulation pad 4 can be fixed to the bottom surface of the computer body 1 by tightening the screw 13 to the screw hole 24C in the right side of the manipulation pad 4 on the contrary to above.

[0027]

When the manipulation pad 4 has the structure as explained above, like the embodiment and the first embodiment explained above, the manipulation pad 4 can be developed in the right or left side for the computer body 1 without development of the manipulation pad 4 in the front side of the computer body 1. Moreover, although the window 12, screw 13 and screw holes 24A, 24B, 24C are not always necessary, these can be used to surely fix the manipulation pad 4 to the computer body 1 when it is used or unused.

[0028]

[Effect of the Invention]

As explained above in detail, according to the present invention, the coordinates input device having manipulation property same as that of the mouse can be mounted to a portable type personal computer having the limited mounting space and can be manipulated while it is taken out from the body when it is used. Therefore, it is possible to provide a portable personal computer which is substantially provided in standard with the coordinates input device which is corresponding to the mouse assuring excellent manipulation flexibility to facilitate rather stable fine adjustment of cursor even when manipulation is rather complicated.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1]

Diagram showing the appearance of a personal computer in relation to an embodiment of the present invention.

[Fig. 2]

Diagram showing a part of the personal computer in relation to an embodiment.

[Fig. 3]

Diagram showing the appearance of a coordinates input device in relation to the embodiment.

[Fig. 4]



Diagram showing the bottom surface of the personal computer in relation to the embodiment.

[Fig. 5]

Diagram showing a structure of the projected member in relation to the embodiment.

[Fig. 6]

Diagram showing a mounting structure of manipulation pad in relation to the embodiment.

[Fig. 7]

Diagram showing a mounting structure of manipulation pad in relation to the embodiment.

[Fig. 8]

Diagram showing the appearance of personal computer in relation to a modification 1 of the embodiment.

[Fig. 9]

Diagram showing the appearance of personal computer in relation to the modification 1 of the embodiment.

[Fig. 10]

Diagram showing a rotating mechanism of the manipulation pad in relation to the modification 1 of the embodiment.

[Fig. 11]

Diagram showing the rotating mechanism of manipulation pad in relation to the modification 1 of the embodiment.

[Fig. 12]

Diagram showing the appearance of personal computer in relation to a modification 2 of the embodiment.

[Fig. 13]

Side elevation of personal computer in relation to the modification 2 of the embodiment.

[Fig. 14]

Diagram showing a slide mechanism of the manipulation pad in relation to the modification 2 of the embodiment.

[Fig. 15]

Diagram showing the manipulation pad in relation to the modification 2 of the embodiment.

[Fig. 16]

Diagram for explaining a coordinates input device of the related art.

[Description of Reference Numerals]

1.....Computer body; 1A.....Bottom surface;

2.....Display screen; 2A.....Display unit (output unit);

3.....Mouse (coordinates input device);  
3A, 3B....Click button; 3C, 3D.....Projected portion;  
3E....Recess; 4.....Manipulation pad (mouse pad);  
5.....Screw; 6.....Washer; 7.....Projected member;  
8 . ....Spring; 9.....Pawl section;  
10....Accommodating section; 10A, 10B.....Groove;  
11....Pawl section; 12.....Window; 13.....Screw;  
14A...Bearing (manipulating pad 4 side);  
14B...Through hole; 20....Rotating mechanism;  
21 . ...Metal rod;  
22A, 22B....Bearing (computer body 1 side);  
23 . ...Through hole;  
24A to 24C....Screw hole (manipulation pad 4);  
100 . ..Pointing device; 101....Electrostatic pad;  
102...Track ball; 103....Cursor;  
104 . ..Keyboard (input unit).  
105 .